

Remarks

This Reply is in response to the Office Action mailed August 10, 2007, and a telephone interview with Examiner Oanh L. Duong on October 30, 2007. Applicant acknowledges the courtesy of an interview with the Examiner, during the course of which interview several amendments to the claims were discussed, the substance of which amendments are set forth fully herein. No additional fee is due with this communication.

I. Summary of Examiner's Rejections

Prior to the Office Action mailed August 10, 2007, Claims 1-24 were pending in the Application. In the Office Action, Claims 1, 4, 5, 9, 13, 17 and 21 were objected to because of various informalities. Claims 1-24 were rejected under 35 U.S.C. 102(b) as being anticipated by Jacobs et al. (U.S. Patent Application Publication No. 2002/0023173 A1 hereafter Jacobs). Claims 1, 9, and 17 were rejected under 35 U.S.C. 102(b) as being anticipated by Admitted Prior Art (hereafter APA).

II. Summary of Applicant's Amendment

The present Reply amends Claims 1, 4, 6-9; 12, 14-17, 20, and 22-24; cancels Claims 2, 5, 10, 13, 18, and 21; and adds Claims 25-30, leaving for the Examiner's present consideration Claims 1, 3-4, 6-9, 11-12, 14-17, 19-20, and 22-30. Reconsideration of the Application, as amended, is respectfully requested.

III. Claim Objections

In the Office Action mailed June 11, 2007, Claims 1, 4, 5, 9, 13, 17 and 21 were objected to for various informalities. Accordingly, Claims 1, 4, 9, and 17 have been amended as shown above to address the informalities. Reconsideration thereof is respectfully requested.

IV. Claim Rejections under 35 U.S.C. §102(b)

In the Office Action mailed August 10, 2007, Claims 1-24 were rejected under 35 U.S.C. 102(b) as being anticipated by Jacobs (U.S. Patent Application Publication No. 2002/0023173

A1). Claims 1, 9 and 17 were also rejected under 35 U.S.C. 102(b) as being anticipated by APA.

Claim 1

Claim 1 has been amended to more clearly define the embodiment therein and to comply with Examiner's objections as noted above. As amended, Claim 1 defines:

1. *(Currently Amended)* A system for communicating information about server resources between servers in a cluster, comprising:

a server cluster having a plurality of cluster members, including a first cluster member and a second cluster member;

a set of resources or services on said first cluster member that can be used by other members in the cluster;

wherein said first cluster member sends an advertisement of its services to other cluster members,

wherein if said second cluster member determines said second cluster member is out of synchronization with said first cluster member, or missed an advertisement, said second cluster member makes a Hypertext Transfer Protocol (HTTP) point-to-point request to said first cluster member requesting the advertisements missed;

wherein said first cluster member responds to said HTTP point-to-point request by sending a HTTP point-to-point response including an update of said first cluster member's Java Naming and Directory Interface (JNDI) tree to said second cluster member.

Claim 1, as amended, more clearly defines wherein if said second cluster member determines said second cluster member is out of synchronization with said first cluster member, or missed an advertisement, said second cluster member *makes a Hypertext Transfer Protocol (HTTP) point-to-point request to said first cluster member requesting the advertisements missed; wherein said first cluster member responds to said HTTP point-to-point request by*

sending a HTTP point-to-point response including an update of said first cluster member's Java Naming and Directory Interface (JNDI) tree to said second cluster member.

The advantages of Claim 1, as amended, include if one of the receiving servers misses an advertisement, i.e. it becomes out-of-sync with the sending server, then the second (receiving) server makes a reliable HTTP point-to-point request to the first (sending) server asking for everything it missed. Because the request and response are HTTP point-to-point messages, instead of multicast messages, the number of messages sent in the cluster is reduced, which reduces the likelihood that message buffers are overflowed. The result is enhanced overall cluster stability and scalability.

Traditional multicast messaging presents a number of problems. First, multicast messaging is an unreliable transport mechanism; information can be intercepted or dropped in transit. As a result, servers within the cluster can become out of synchronization with one another. Second, because multicast is a one-to-many messaging system, it results in a high volume of messages being sent within the cluster. This can quickly lead to system method buffer overflows and cause stability problems. For example, if a first server becomes out of synchronization it can multicast a negative acknowledgement (NAK) to the cluster. A second server can then multicast a response, containing the missing information, or a statedump, containing all of the second server's information, to the cluster. Because the servers in the cluster communicate through multicast messaging, the NAK and the response or statedump are sent to all servers in the cluster not just the requesting/receiving servers. Additionally, multicast messaging, and the methods used to make it reliable, reduce scalability. As the number of services provided by a server increase, so does the size of the statedump. Coupled with the increasing size of a cluster, this could lead to longer startup time and the time each server takes to stabilize in a cluster. The need to send frequent large multicast messages also impacts the cluster scalability and the performance.

Jacobs discloses a clustered enterprise Java processing system which uses multicast messaging. In an embodiment, provider stubs are distributed and replicated naming trees are created by an IP multicast or point-to-point protocol. In an IP multicast embodiment, there are three kinds of messages: Heartbeats, Announcements, and StateDumps. (Paragraph [0144]). Each server includes in its Heartbeats the sequence number of the last Announcement it has

sent. Negative Acknowledgments ("NAKs") for a lost Announcement are included in subsequent outgoing Heartbeats. (Paragraph [0144]). If a NAK arrives for an Announcement that has been deleted, the server sends a StateDump, which contains a complete list of the server's services and the sequence number of its next Announcement. When a new server joins an existing architecture, the new server NAKs for the first message from each other server, which results in StateDumps being sent. (Paragraph [0144]).

Applicant respectfully submits that, as noted above, Jacobs uses reliable multicast messaging to update new servers and to keep each server's JNDI consistent with the cluster's JNDI. This presents the several problems described above. The embodiment of Claim 1, as amended, addresses these problems in that it uses HTTP point-to-point messaging, instead of multicast messaging.

Jacobs also discloses the first processing device communicates with the second processing device using a protocol selected from the group consisting of Transmission Control Protocol ("TCP"), Secure Sockets Layer ("SSL"), Hypertext Transport Protocol ("HTTP") tunneling, and Internet InterORB Protocol ("IIOP") tunneling. (Paragraph [0028]).

Communication between cluster members is generally effected through the use of some proprietary protocol, whereas HTTP is a protocol used primarily in client-server communication. Applicant respectfully submits that in Jacobs, HTTP is described only as being one possible protocol on a communication medium connecting two or more processing devices. In a cluster, the cluster of servers appears as a single processing device to external devices. Applicant respectfully submits that Jacobs does not disclose the use of HTTP point-to-point communication between cluster members to update each cluster member's JNDI tree, as defined by Claim 1.

In view of the above comments, Applicant respectfully submits that Claim 1, as currently amended, is neither anticipated by nor obvious in view of the cited references, and reconsideration thereof is respectfully requested.

Claims 1, 9, and 17

Claims 1, 9, and 17 were also rejected under 35 U.S.C. 102(b) as being anticipated by Admitted Prior Art (hereinafter APA). Applicant respectfully traverses the rejection. In

particular, Applicant makes no admissions as to the use of point-to-point messaging in the prior art. Additionally, it appears that the Background of Applicant's Specification describes the same version of WebLogic Server that is disclosed by Jacobs. As such, Applicant respectfully submits that the comments provided above are similarly applicable with regard to this rejection.

In view of the above comments, Applicant respectfully submits that Claim 1, as currently amended, is neither anticipated by nor obvious in view of the cited references, and reconsideration thereof is respectfully requested.

Claims 2, 5, 10, 13, 18, and 21

Claims 2, 5, 10, 13, 18, and 21 have been canceled, rendering moot the rejection of these claims.

Claims 3-4 and 6-8

Claims 3-4 and 6-8 have not been addressed separately but it is respectfully submitted that these claims are allowable as depending from an allowable independent claim, and further in view of the comments provided above. Reconsideration thereof is respectfully requested.

Claims 9, 11-12, 14-17, 19-20 and 22-24

The comments provided above with respect to Claims 1, 3-4, and 6-8 are hereby incorporated by reference. Claims 9, 11-12, 14-17, 19-20 and 22-24 are method and computer readable medium claims, respectively, corresponding to the system claims of Claims 1, 3-4, and 6-8. For similar reasons as provided above for Claims 1, 3-4, and 6-8, Applicant respectfully submits that Claims 9, 11-12, 14-17, 19-20 and 22-24 are similarly neither anticipated by, nor obvious in view of the cited references, and reconsideration thereof is respectfully requested.

V. Additional Amendments

Claims 25-30 have been newly added by the present Response. Applicant respectfully requests that new Claims 25-30 be included in the Application and considered herewith.

VI. Conclusion

In view of the above amendments and remarks, it is respectfully submitted that all of the claims now pending in the subject patent application should be allowable, and reconsideration thereof is respectfully requested. The Examiner is respectfully requested to telephone the undersigned if he can assist in any way in expediting issuance of a patent.

Applicant believes that no fee is due with this communication. However, the Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 06-1325 for any matter in connection with this reply, including any fee for extension of time, which may be required.

Respectfully submitted,

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